



4. Stress Distribution between Bonding Surface of Dental Filling in Enamel and Dentine

M. A. M. Soliheen¹, D. Kurniawan² and F. M. Nor^{1, *}

¹Universiti Tun Hussein Onn Malaysia, Batu Pahat, Malaysia

²Universiti Teknologi Malaysia, Skudai, Malaysia

*Email: fethma@uthm.edu.my

Abstract

Dental decay (or caries) is common disease worldwide. It is caused by acid which first dissolves enamel and afterwards dentine, causing pain when stimulated. Decay occurs most often in the fissures on the top of the teeth or in between the teeth. A solution for this is by having dental filling. This paper investigates the stress distribution between bonding surface of dental filling in enamel and dentine. Finite element analysis was used to perform the numerical analysis on an arbitrarily shaped dental filling inserted on a teeth loaded by a pressure. Dental amalgam and ceramic (porcelain) were taken as the materials of interest. It was found that the dental made of conventional ceramic may not able to withstand heavy pressure from crunching and chewing the way amalgam fillings can, and they may not last as long.

Keywords: finite element, dental filling, enamel, dentine, amalgam, ceramic